AMERICAN VETERINARY REVIEW,

JULY, 1890.

EDITORIAL.

MEETING OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.—Two months more and then *en route* to Chicago—important steps taken—it may make the true *United States Veterinary Medical Association*—hard work of the committee—papers promised—programme well laid out—our thoughts—is it all eastern—where are the western veterinarians—our fears—perhaps the result of our anxiety for success—yet they may be correct—an open letter from a western veterinarian—Dr. Williams gives severe hits, and many of his remarks seem to agree with our thoughts—his open letter. AMERICAN VETERINARY COLLEGE BUILDING FUND.—American veterinary education—veterinary colleges of to-day—colleges in years to come—private establishments—the good they do—the danger that threatens them—duties imposed on officers of colleges—obligations to alumni—new action of the officers of the A. V. C.—inquiries by an alumnus—the condition of affairs—twenty thousand dollars wanted—five thousand are donated—fifteen thousand more will allow a building to be started—will that plan succeed?—will it fail?

MEETING OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.—A little over two months more and the meeting of the United States Veterinary Medical Association will be held in Chicago. In Chicago!—A bold and grand move that the Association will make—the first which is likely to bring out that body as the true veterinary organization of the whole United States. We say the first, as the attempt made some years ago through the call at Cincinnati can scarcely be considered as one which had the slightest show of success. Yes, at Chicago—for the first time—the veterinarians of the East and those of the West, those of the North with those of the South, are to meet and fraternize, and to sanction by their union the organization which for years has been known as

The United States Veterinary Medical Association. To realize this, to make of this meeting a success, the committee in charge have worked hard; and, if we can judge by the communications and notices that have appeared in the REVIEW and in the *Journal of Comparative Medicine*, the committee have done all that they thought was possible. Papers have been promised, traveling arrangements have been made, and a good programme has been laid out for a whole week. Yes, the committee deserve well, and it is to be hoped that success will be the result. And yet, when we carefully read the notices that have been published, it seemed to us that something was missing. We feared that something was wanted, and in that want we looked for danger. It appeared to us that if much was said of what the eastern veterinarians were about doing, not enough had been shown of what our friends in the west would contribute. We learned of papers promised by gentlemen in Pennsylvania, New York and Washington, but what about Ohio, Indiana, Illinois, etc.? If there be good men in the East, are some not to be found also in the West? If the first were to be heard, would not the second be listened to? These are questions that present themselves to our mind, and we do not know but that we may be prompting unnecessarily for things which if neglected might be a bar to the successful issue of the meeting.

However, while we are waiting and preparing ourselves for our western trip, we have received an open letter, directed to the secretary of the Association, from one of our colleagues, which seems to corroborate our fears. We hope that, severe as the letter is, it will prove a good warning and a prompt stimulus to take action to prevent the possible failure which threatens the next anniversary meeting of the Association.

The letter of Dr. W. L. Williams reads as follows:

[OPEN LETTER].

BLOOMINGTON, ILLINOIS, June 19th, 1890.

Comitia Minora of United States Veterinary Medical Association, W. Horace Hoskins, D.V.S., Secretary:

DEAR SIR:—Recognizing the desirability and need of a national society which should faithfully represent the veterinary profession of the United States, a number of western veterinarians some months ago asked you to hold the next

meeting of your organization in Chicago, with the result that you acceded to our request.

The contents of the letters of other veterinarians addressed to you on this matter are unknown to me, but they were probably of a very similar tenor to mine, so that when it is spoken of the others may probably be included in the same category.

In my letter your society, (which Dr. Huidekoper, Rep. 26th An. Meeting U. S. V. M. A. 1889, p. 3, as retiring President, dubbed the "Mud Turtle Society," on account of its laziness) was invited to come out from behind the Alleghany mountains, hold a meeting in Chicago, permit and invite western veterinarians to attend and fraternize with you, let your body cease to be a society of the Atlantic States and become, in harmony with your name, a national organization.

In reply to my letter you wrote: "I have decided to cast my vote for Chicago and to use my influence in having the meeting held there. Should Chicago win, the responsibility will then rest on you western veterinarians to make the meeting a success. * * * I feel compelled to defend the Association in part for its infrequent pilgrimages to the west; first, because two-thirds of its members are east of the Alleghany mountains, (why?), and only once since I became a member was there any effort to hold a meeting in the west. I voted for it, and some twenty-five of us journeyed to Cincinnati, Ohio, with what result—the *application* of two members of the profession for membership. I believe Drs. Meyers and Detmers almost completed the quota of western veterinarians present."

The only record of the Cincinnati meeting available to me (Dr. Huidekoper's retiring address) does not show that the eastern veterinarians furnished any papers or other programme to induce western veterinarians to attend, nor that they were invited to supply or take part in any such programme, so that the only inducement held out to western veterinarians to attend the meeting of your society, which has a well-earned record for holding worthless meetings, consisted apparently in the opportunity of gazing upon your personnel, and the result was that few availed themselves of this rare opportunity.

Again, in your note of February 18th, after stating that Chicago had been decided upon as the location for your next meeting, you say "the responsibility of the position I took in so strongly favoring Chicago, will now largely rest upon you to furnish those who opposed our desire with such evidence of western interest and loyalty upon the move that shall prove the wisdom of the change. The Comitia Minora have placed the matters in the hands of a sub-committee of three, consisting of Drs. Huidekoper, Wray and myself, to whom you will communicate your plans," &c.

After months of patient waiting for an outline of the responsible duties which we were expected to discharge, you have advised us under date of May 9th that "We are giving our untiring energies in the east here to the accomplishment of a special train. * * * The veterinarians of the west can do us no greater honor than by their presence and amalgamation with us." * * *

Then, after an approval of a proposed circular letter to veterinarians in Illinois, designed to awaken interest in the Chicago meeting, you suggest that

we liberally advertise your programme consisting of an excursion train and two promised papers by veterinarians of the Atlantic States.

You further add to our responsibilities by asking us to submit for your consideration three suitable halls for the meeting, and also ask that "the names, credentials, and vouchers of all applicants" for membership be sent you as fast as possible, and suggest that you "have in contemplation a special plan of admission for such names, for this meeting, in order to avoid the loss of time of one year before becoming actual members."

In your favor of the 11th inst., you inform me that at a late meeting of your committee you "succeeded" in arranging that for the Chicago meeting you would "recommend" immediate action on suitable applications, your language being such as to lead to the conclusion that such action was not by unanimous consent, and hence liable to suffer at the hands of the minority of your committee, or later when your recommendation should come before the Society, so that no western veterinarian, regardless of any attainments, can have any assurance that his application for membership will be acted upon at the coming meeting, although your constitution and by-laws make no such delay necessary; and yet you term this possible recommendation "a great concession to the west." The thousand qualified veterinarians of the west have asked no "great concessions," nor small ones, from the "Mud Turtle" close corporation of the Atlantic States, we having existed for several years without your charity and apparently without your knowledge of our being, and we do not feel now like asking you to at all humble yourselves in our behalf. Several western veterinarians having suggested to you that the west should be represented on the programme, you reply that "I am informed by Pres. M. that Dr. T. B. will read; Dr. G., of the army, *desires* to occupy a place on the programme, and with Drs. P. and L. on very important committees, and the programme already mapped out, we are fully assured of rich material for food for thought."

As Dr. T. B., under a later date than yours, informs that he is undecided as to a topic for his paper, and somewhat apprehensive (owing to recent utterances of your committee) that a paper from him is really not desired, his participation in the programme as a western veterinarian is somewhat problematical, and since you have merely stated that Dr. G., of the army, "desired" to occupy a place on the programme, without saying that his wish had been granted, gives no rosy view of his prospects, besides which a veterinarian of the army can in no wise be considered a representative of veterinary science in the west; and so we are represented by Drs. P. and L., who hold inferior positions on important committees, which may or may not make reports, and with this representation of the west in the Chicago meeting, your programme has been "mapped out," completed and sealed.

Your communications are in full accord with the public utterances, through the *Journal*, of Dr. Huidekoper, of your sub-committee, who announces each issue that the programme of the Chicago meeting will be of great interest, consisting of an excursion train and two eastern papers.

Western veterinarians have as yet received no assurance, either through you or the *Journal*, that they will be cordially welcomed to the Chicago meeting as professional brethren; they have no assurance of being permitted to take part in

the meeting, and are scrupulously excluded from any active part in the programme, so we have the spectacle of a national society congregating on an excursion train, whose doors are locked when the Alleghany Mountains are reached, and the Society journeys one thousand miles from home to hold a meeting, with apparently no other purpose in view but the charitable act of allowing western veterinarians, who are not beggars, to get a glimpse of the "wise men of the east."

Your utterances have already broken up a plan for concerted action on the part of the presidents of veterinary societies and professors of veterinary science in agricultural colleges in several of the western States, intended to awaken an interest in your society. And every plan and effort on our part is so thoroughly clogged that no other course is left open to us but to renounce all responsibility for the success of the meeting, and allow it to rest where it properly belongs—with your committee—or, as a prominent professor of veterinary science puts it, "let them run their own show."

We asked you to hold a national veterinary meeting in Chicago, and should you have arranged to do so there was every prospect that it would prove the largest and most influential veterinary gathering ever convened in America; but if your present attitude is to be maintained, you will do well to unlock the doors of your excursion train when you reach Cincinnati, and permit the entrance into it of fresh recollections of the meeting of 1884, and prepare yourselves for a similar failure at Chicago.

If you can bring all the necessary elements of success for a national veterinary meeting on an excursion train from New York, you are surely prepared, otherwise we would suggest that your position on several important questions be promptly and publicly announced:

1st. Do you recognize as professional brethren those of us in the west who have graduated from the same veterinary colleges from which the most of you have emanated, or in which you teach?

2d. Is the Chicago meeting to be national?

3d. If national, why has your *national* committee frittered away nine-tenths of its time and all energy in arranging for, and devoting nearly all your public utterances to, a purely local excursion train, and leaving wholly neglected one-half (numerically considered) of the veterinary profession of the United States?

4th. Will western veterinarians receive a *cordial* welcome to the Chicago meeting, and will those of us who fully meet the requirements of your constitution and by-laws be unanimously and heartily recommended for immediate election to membership, so that our intercourse with you may be fraternal and pleasant, or will the consideration of our applications be delayed for one year, contrary to your written laws?

6th. Will your Society be kind enough to abstain from making "great concessions" to us, and bestow respect, not charity, upon us?

Very respectfully,

W. L. Williams.

American Veterinary College Building Fund.—The history of American veterinary education yet to be written will contain some very interesting and possibly surprising

facts. As time lapses and circumstances alter, changes will doubtless occur in the way of progress and development, which will prove that the veterinary study of the present and of the future are two things quite distinct and different in their aim and accomplishment. Where will be the veterinary colleges which have been started, some as long ago as over thirty years, with others of later origin? Some of them established by private enterprise, and others with official assistance—so to speak. Where will those be which, though legally organized and chartered, have been kept alive only by personal efforts and private financial aid?

A glance at what has been done so far, shows that at present but a single one of these schools has succeeded in releasing itself from the dangers which threaten the existence of schools sustained by private and personal enterprise, and this notable exception is the Montreal Veterinary School, which by its good fortune in finding shelter under the protecting wing of McGill University, has, to a great extent, obtained a contract of, if not assured immortality, at least of an existence as long as the university itself survives other schools, whether in the United States—as in New York, Illinois—or in Canada, none have as yet succeeded in drawing a similar prize. Irrespective of what their standing may be; without reference to the size of their classes, and notwithstanding the excellence of their reputation, they are all more or less exposed to the same danger, if not of a sudden collapse, at the least, of encountering very great embarrassments. Schools, like those of Philadelphia, of Boston, and of Cornel, or of such of the States that are directly connected with agricultural colleges, are not similarly exposed, their life depending on that of their reliable supporting institutions.

Does it not then become the duty of the officers of those schools which are still obliged to trust to their own resources to take such active steps in the direction of an assured support that the institutions they are governing shall be permanently protected from the possible calamity of failure to maintain their existence? The sooner the necessary steps are taken the better. Practicable and simple at the beginning,

they would, in the long run, place these institutions in the position of bearing any of the dangers which seem to be threatening the private institutions, and assure them of permanent and increased usefulness. If this is not a sufficient motive, the obligations which the trustees of our institutions assume toward their alumni should be recognized as of such a nature that they are bound to look after the *alma mater* of those whom *they have graduated.*

These remarks are suggestive to us as pertinent to certain efforts towards the erection of a permanent home for their school, now in progress by the officers of the American Veterinary College—efforts which, we believe, might have been advantageously entered upon long ago. If for the last fifteen years, during which the college has been running its successful career, a sinking fund had been maintained, it would to-day have assumed sufficient proportions to realize the object in view, to wit, to provide the institution and its alumni with a suitable building which should be their own, and which would constitute a condition as would almost serve as a guarantee of long existence, as without it, it will never progress.

And this obviously applies equally to other schools which are in the same condition. The private and personal interests which are now engaged in prosecuting the work of these institutions, and which now constitute their strength, will inevitably, sooner or later, interfere with their management, and to a greater or less extent, threaten their very being; and what then? What is to become of the material gathered and accumulated? What of the time and efforts which will have been dissipated, and with the labor wasted, and, above all, what will become of the *alma mater* of those who hold her diplomas? To-day, the schools to which we are referring are more or less dependent on one man—if not by the professional work which he does in connection with the school, at least by his private, and too often, pecuniary assistance, and certainly it is greatly to be regretted that interests so great are thus placed at the mercy of contingencies and circumstances, unforseen, it is true, but which are likely at any moment to become factors and potencies for evil.

For these and other reasons, it seems to us the movement inaugurated by the officers of the American Veterinary College every way is a proper one, and it is to be hoped it will meet with ample success. So long as the people of the Excelsior State are not prepared to help an institution whose record is so well enough known to form its own certification, it remains to be seen whether this is not the next best step to take.

And while we are referring to the subject, we think it well to present to our readers, for the special benefit of those who may be directly interested in our answer, a communication by us received from an alumnus, bearing on the same subject.

AMERICAN VETERINARY COLLEGE BUILDING FUND.

Prof. A. Liautard, Editor:

DEAR SIR.—Will you allow me to return the enclosed, and ask through the REVIEW some information. The names that I read on the circular are sufficient evidence of the earnestness of purpose of the object in view, it is true; but the subject is important, and I think deserves more light than can be formed from the printed document. I am ready to help when I know more about it.

Yours very truly,

AN ALUMNUS.

The following is "the enclosed":—

DEAR SIR.—The time has arrived when there is imperative need of a college building for your Alma Mater; to this end the Trustees and Faculty have been and are doing their utmost. Plans under careful and long consideration are now matured, but $15,000 are still required, and to realize this your Alma Mater hereby makes a personal appeal to you for a donation.

There are now three hundred and fifty alumni, and we feel that their collective donations would be a substantial contribution toward this object.

Answer *by return of mail* what you can donate, if called upon, within the next thirty days. Your answer and those of your fellow alumni will determine whether we can or cannot commence to build a college this summer, that your Alma Mater may take possession of the same next fall.

F. D. WEISSE, M.D.,
President of the Board of Trustees.
A. LIAUTARD, M.D., V.M.,
Dean of the Faculty.

This letter reached our office in due time, and we take this opportunity to answer it. It is but right that the alumni of the American Veterinary College should know the facts

which have induced the President of the Board of Trustees and the Dean of the Faculty to take the steps proposed in the circular.

Many of the alumni are aware of the efforts made several years ago to the same effect, but which were frustrated through mismanagement, but not until the officers of the college had been left in part possession of two lots of ground, which had been selected as the site of the contemplated building.

Some two years ago another attempt was made, in the form of an application to a number of wealthy citizens of New York, asking for donations or subscriptions to a building fund for the college. This essay was a failure; about as complete as it could well be, the sole result being a gift of $25.00, contributed by some anonymous friend. Attempts were also made to find some wealthy and public-spirited gentleman who, even with the inducement of liberal interest, could be induced to place us under a roof of our own. At first this seemed possible, and, in fact, up to a recent date we had hopes in this direction to such an extent that plans had been drawn and rough estimates of expenses procured. But as we were about reaching and realizing the so-long-sought and hard-worked-for result, a financial drawback presented itself, and the matter was dropped.

Now the whole thing may be thus simplified:

There remains due in immediate cash upon the two lots now partly owned by the college, a sum of *twenty thousand dollars*. Were *this paid, a building could be put up immediately*, with *a building loan to the amount of* $30,000. Of this sum of $20,000, the Board of Trustees and Faculty of the college will donate one-quarter, or $5,000. There remains then a deficiency of $15,000, and we have looked to the alumni for help to this extent. We know that it is hard work, we recognize the fact that it is difficult, perhaps impossible, for some to give anything whatever, but let every one act upon his sense of duty, and give what he can afford. A number of the alumni, upon a former appeal, have once already proved their willingness to help. This was when the first attempt, before

referred to, was made. In remembering what they did then, we have inferred that the entire body of alumni might, with propriety, be called upon, and, judging by the very few answers that have already reached us, we have every reason to believe that the amount required will finally be donated. If we are disappointed in this expectation, we intend still to persevere in this line of work and reach, some time, a successful issue, if such a thing is practicable.

ORIGINAL ARTICLES.

THE PATHOLOGY OF AZOTURIA

AS SUGGESTED BY ITS HISTORY AND SYMPTOMS.

By W. L. Williams, V. S.

A paper read before the joint meeting of the Indiana and Illinois Veterinary Medical Associations.

The number of theories as to the pathology of azoturia is limited only to the number of those who have written upon the subject, each writer apparently entertaining different views, so that it can well be said that there is no generally accepted doctrine as to its intimate nature, and we may add that each theory so far offered is open to more or less serious objection.

The most uniform and serious objection to all the theories so far proposed, is their essential lack of harmony with the preparatory and clinical history of the disease, the cardinal facts in the origin of which are:

1st.—The disease is the immediate result of more or less severe muscular exertion. Some authors, it is true, merely say that such muscular activity *generally* precedes the attack, but it may safely be said to *always* be the case.

To accomplish this muscular exertion, the animal need not but generally does leave the stall. It may be brought about in the stall by the animal becoming cast, or by anything which may cause sudden muscular excitement.

2d.—This exertion must take place after a rest extending

over an indefinite period of at least about twenty-four hours, and must be during this time, as near as possible, complete; that is, the animal must be so confined that it would or could not make any marked amount of muscular exertion.

A suitable subject for azoturia does not contract the disease at grass, and very rarely, if at all, when allowed the freedom of a spacious box stall, even though all other necessary conditions, as to food and care, be present, so that almost without exception, the animal affected with azoturia has been closely confined by the halter.

3d.—This period of rest must be of comparatively short duration, rarely exceeding five to ten days. If the animal is kept in the stall for a much greater time, its liability to contract, or rather possibility of, contracting azoturia ceases.

4th.—Prior to this period of rest, the animal must have enjoyed an active life, either at labor or unrestrained freedom; must have been of vigorous constitution, well-nourished on rich nitrogeneous food; in age not far from the prime of life, and the animal economy not subject to any considerable drain upon its resources. Thus we rarely see this malady in three-year-olds, and only in those of very early development, and possessing great vigor; still more rarely is it seen in aged horses which have begun to decline.

It is unknown in mares, suckling foals, and those far advanced in pregnancy.

These essential facts in the clinical history of the origin of azoturia are only partially brought out by most writers, one author laying special stress on one of them, while another notices particularly some other of the prominent facts, merely hinting at the remaining ones, or, in some cases, even denying them, thus creating much confusion; but we believe a careful study of the disease will prove the correctness of the foregoing propositions.

Much of the perplexity in the history of this disease is doubtless occasioned by confounding with and mistaking for azoturia other quite distinct diseases, especially spinal or cerebro-spinal meningitis and parturient eclampia, in the differentiation of which the afore-mentioned cardinal points in the

history of azoturia will, if their correctness be admitted, serve as a valued guide.

Prof. Williams (Prin. Prac. Vet. Med.) says; "The pathology of the disease is, in my opinion, a hypernitrogenous condition of the blood and system generally, due to over-feeding and want of exercise. . . . . It seems necessary that some degree of muscular exertion be performed, and the only way in which I can account for this is, that the blood, before exercise, contains a superabundant quantity of albumen, unappropriated by the tissues, and that the exercise, by increasing the rapidity of circulation and the respiratory movements, induces a rapid oxidation of such superabundant albumen, whereby it is transformed into urea, hippuric acid, etc., with which the blood becomes overloaded, and the kidneys stimulated to excrete what is proving deleterious."

This theory of origin, as we shall later have occasion to repeat, seems to us the most consistent of all, in so far as it goes, but it stops short of completion and fails to explain or suggest why the disease occurs uniformly very early in exercise, when, if the animal is severely worked, there is probably as much of these "oxidized albuminoids" in the blood after one or two hours of labor as before; nor does it make clear to us why an animal which has regularly been allowed an apparently trivial amount of regular exercise, which would in no way diminish the hyperalbuminosis, will not contract the disease, neither does it explain why in the early stage of the disease prompt quietude aborts the attack.

The late Prof. Robertson (Equine Med.) subscribed to the doctrine of hyperalbuminosis, and believed also that the pathological products of albuminoid decomposition begin to accumulate in the blood prior to exercise, so that, to his thinking, the pathological state antedates the muscular exertion. Beyond this he does not attempt to go, admitting that many phenomena of the disease are, as yet, unexplained.

His belief that the pathological changes exist prior to exercise is strongly denied by clinical experience, since muscular exertion is uniformly an essential factor in the origin of the disease.

His theory leads him to adopt a line of therapeutical action which clinical observation and even his own words condemn.

Advising in all cases a brisk aloetic purge in the first stages, he practically consigns his severe cases to death, while in those mild cases, where the horse is still able to stand, and where rest and quietude, without medication, constitutes a practical specific, his drastic purge, based upon his theory of the pathology, leads him to remark that "so long as the animal is able to stand, though unable to execute any movement, there is always some prospect for recovery."

The ideas of other English writers vary greatly, but cannot be reviewed here, and German writers are evidently no more nearly agreed. Bollinger terms the disease "toxaemic haemoglobinuria, due to auto-intoxication, resulting from the action of cold or exercise, forming a toxic ferment which destroys the red blood corpuscles and leads to haemoglobinuria."

Fröhner rejects Bollinger's views in the main, and adopts the name "rheumatic haemoglobinaemia," due to "taking cold," and resulting mainly in a primary inflammation of the posterior muscles, leading to a disintegration of the coloring matter of the muscles (identical with haemoglobin) and its passage into the blood.

Dieckerhoff believes the affection to be an acute constitutional malady, evidenced by severe parenchymatons, myositis, and proposes the name "lumbago gravis," the latter term being indicative of the very grave nature of the disease, viewed from his clinical observation under that therapeutical management suggested by his view of its nature. Like many others, he suspects the existence in the hypernitrogenous blood of a toxic ferment.

Further reference to the diverse views of many writers would only add to the number of theories, without adding to or detracting from any one.

It is a well recognized fact that in those diseases whose pathology and etiology have been satisfactorily determined, there always exists a reasonably perfect harmony between the

clinical history and the pathology; so much so, that with one quantity known, the other is promptly suspected or admitted.

The co-habitation of tuberculous with healthy animals is followed by extension of the disease; its contagiousness is admitted, the existence of a specific virus assumed, and the microscope reveals tubercle bacilli. Again, a disease may be assumed to be contagious when some special form of bacillus is recognized as an essential factor in the disease, and experimental inoculation or extensive clinical observations support such a conclusion; so a careful study of the preparatory and clinical history and symptoms of azoturia should suggest something as to its real pathology.

The history of fit subjects for azoturia, their age, evident healthy, vigorous constitution, rich, healthful food and general management, all warrant us in assuming, as most writers claim, that the blood is the essential theater of the pathological changes; and hence we may turn to a study of this tissue with strong hopes of learning the essential conditions in the production of the phenomena of this disease, and we are led to enquire, what changes are effected in the blood by that kind of feeding and management which leads to azoturia.

First, it has been shown by Panum, Dennis and Pozziale, that the blood of animals at the age when horses are subject to azoturia, that is, in middle life, contains a markedly greater proportion of solids, especially of red corpuscles, and less water and salts, than animals either younger or older, except perhaps newly born animals.

Andral and Tavanet have next shown that the strongest animals of a given species (and only these are subject to azoturia), show quite uniformly the largest proportion of red blood globules.

In such animals it has been shown that by a change from hard labor with bad food, to lighter labor or rest, with diminished respiration and richer albuminoid food, we produce a well marked further advance in the hyperalbuminotic condition, the blood, in such cases, attaining its maximum physiological amount of albumen and other solids, after a comparatively short period of rest, these constituents declining again with

prolonged rest; and parallel with this prolongation of rest and decline of albumen, the susceptibility of the horse to azoturia retrogrades and finally ceases.

This hyperalbuminosis is accepted by some as the one essential factor in the production of the disease, but this doctrine is opposed by the clinical fact that this absolute plethora may and does exist, without in any case producing the disease except in conjunction with muscular exertion.

Consequently, while accepting the theory of hyperalbuminosis as the first essential factor in the causation of azoturia, there yet remain for explanation other phenomena in the clinical history of the disease and we are led to inquire why muscular exertion is necessary in the development of the pathological condition, and what changes are produced in the animal economy, especially in the blood, by this sudden exertion.

Those pathologists relying wholly upon the theory of hyperalbuminosis to explain all the phenomena, resort to various means. Thus Prof. Williams suggests the rapid oxidation of albuminoids upon exertion, with a resultant surcharging of the blood with uric, hippuric acid, &c., yet he fails to explain why animals sparingly exercised and doubtless as truly hyperalbuminotic as any, yet do not contract azoturia when suddenly put to severe exertion.

Dieckerhoff claims the development, through the agency of muscular effort, of a toxic ferment which pre-exists in the blood, but the careful observer must admit that, up to the moment of attack, the subject bears every possible evidence of typical health. That prompt quietude in the early stages of the disease affords equally prompt relief, while, were a toxic ferment present it would not cease to act with cessation of exercise; and moreover, muscular exertion would not likely be essential to its awakening and development; and further, careful light exercise for a few hours prior to hard labor constitutes an invincible guard against the disease, about the animals subject to it, although such light preliminary exertion could by no know means destroy an existing toxic ferment.

In searching for the remaining essential factors in the

development of the disease, some turn to the kidneys, others to the liver and others again to the spinal cord, but the history, symptoms and morbid anatomy of azoturia do not correspond with the phenomena we would expect to find in diseases of any of these organs, and so we must continue our study of the changes in the blood.

Parallel and in inverse ratio to the variation of albuminoids in the blood, we find changes in its water, so that after a comparatively brief rest, under the same conditions producing hyperalbuminosis, we find a well marked diminution of the amount of water in the blood; while on the other hand, poor feeding with prolonged labor, or a period of rest extending beyond the attainment of the maximum amount of the albuminoids in the blood, the water again increases, so that up to the moment of an attack of azoturia we find that the animal has been subjected to such conditions as to produce the maximum amount of albuminoids and the minimum of water in the blood and tissues, compatible with health, and that any augmentation of either of these strained physiological states produces at once a pathological condition.

We must next inquire what changes are brought about in the blood by the final chapter in the production of azoturia—the sudden and more or less severe muscular exertion—and we find according to experiments that the most notable change for a brief time, is a well marked further diminution in the water and increase in the solid constituents—owing mainly to the sudden accumulation of large quantities of tissue waste, the result of muscular exertion—before additional water can be drawn from other organs to restore the normal humidity, leaving the blood too concentrated to properly perform its functions, the red globules in part even perishing.

Thus a study of the history of azoturia suggests as to its etiology three essential factors.

1st. An increase of the solid constituents of the blood, principally albumen, to the maximum physiological limit.

2d. A corresponding decrease in the water of the blood and other tissues to the minimum amount compatible with health—a real quantitative and qualitative plethora.

3d. A further increase of the solid constituents of the blood from the accumulation in it of the products of tissue waste, the result of muscular exertion, and a still further deprivation of water concentrating the blood to an extent which can no longer be regarded as physiological but as essentially pathological.

A careful study of the symptoms suggests a very similar condition to that outlined.

The evident vigor of constitution, the powerful muscular development, the want of excessive fat and the remarkable show of eagerness and strength just prior to the attack of azoturia, is strongly suggestive of hyperalbuminosis.

The absence in animals subject to azoturia of œdematous (hydrœmic) swellings of the limbs, lower parts of belly, sheath, &c., so common in animals at rest, not subject to the disease, constitutes strong evidence of the decrease in the humidity of the blood.

Finally, when sudden muscular exertion changes the condition from a physiological to a pathological state, the morbid symptoms are in many respects closely allied to the symptoms produced by sudden blood concentration and loss of its humidity, as is observed in the cramp and muscular spasms, in severe hemorrhages, in certain stages of cholera, and more rarely in severe drastic purgation.

The highly colored urine, with its contained haemoglobin urea, uric and hippuric acids, is strongly suggestive of the destruction of the red blood globules, perhaps also of the muscle corpuscles; and their conversion into these less complex bodies can in no way be more surely and promptly brought about than by suddenly withdrawing from the blood and other tissues an amount of water beyond the physiological limit, as this excessive concentration and dryness means blood stasis; and unless the humidity is quickly restored, they point to destruction of the red globules or of the similar muscle elements.

Remembering, as has been demonstrated, that the quantity of blood in muscular tissue, during severe work, is increased by about eighty per cent. over the amount contained in a

state of rest, we can understand by the suggested theory why the great muscles of the loins and hips which supply the principal power in locomotion should usually present the first and most pronounced evidence of disease; the sudden drain upon the already deficient water supply in the muscular tissues and in the greatly augmented amount of blood supplied to these muscles quickly leading to blood stasis, extravasations, muscular cramps, succeeded by paralysis, destruction of the red globules, the excretion of their waste products in the urine and the peculiar tense swellings of the muscles involved.

Such a view of azoturia affords us a safe guide to prevention, viz: regular daily exercise or well marked diminution in the amount of food during rest. It also offers us—what clinical observation has proven the most successful means of treatment in the earlier stages before the animal has gone down—prompt quietude and rest for two or three hours constitutes well nigh a specific, and the same line of treatment, rest, quietude, without medication or handling calculated to irritate or annoy the animal or to interfere with the normal action of any organ or organs, until the blood by drawing on other tissues, has regained its normal humidity.

This doctrine condemns the use of slings as tending to increase muscular effort and contraindicates the employment of drastric purgatives, which cause an additional serious drain upon the water of the blood and tissues. One writer, advising slings and cathartics, remarks that with such treatment the animal, which remains standing, has a fair chance for recovery, while the condition of the recumbent case is very grave. While against this doleful prognosis, cases treated upon the line indicated by our theory assume a more cheerful prophecy, the recumbent cases largely—the standing cases practically all—making very prompt recoveries, and this largely in proportion to our ability to enforce in the earlier stages the injunction of rest and comfort.

To this end, sinapisms, blisters, uncomfortably hot or irritating applications of any kind to the loins, hips or other parts of the body in the early stages, cannot be too highly condemned,

and a long series of clinical observations fully uphold this judgment.

Even the passing of the catheter in a nervous, irritable animal, especially a stallion or gelding, would, according to our views, be wrong in the earlier stages of the disease, and this too is supported by clinical facts, we having once attended an irritable gelding in the earlier stages of a mild attack of azoturia, the animal perfectly able to stand and walk, which on attempting to withdraw the penis from sheath in order to pass the catheter, became so badly agitated in resisting our efforts that the disease increased in violence to a serious extent, the animal falling to the floor, unable to rise for some time; when, had he been let alone, he would have urinated naturally in a short time or after the lapse of a few hours, the catheter could have been passed with perfect safety and equal efficacy.

These views as to the pathology of this peculiar disease are not submitted as incontestable facts, but we believe they possess sufficient harmony with the history, symptoms, therapeutics, course and termination, as to invite careful study in this direction, with a view to arriving at the true pathological doctrine upon which the veterinary profession as a body can heartily unite.

SURGERY IN FISTULA—PIPE OR REED?

By S. MYLNE, V.S.

A paper read before the joint meeting of the Indiana and Illinois Veterinary Medical Associations.

A solution of continuity of greater or less depth and sinuosity, the opening of which is narrow and the disease kept up by an altered texture of parts, so that it is not disposed to heal. It is lined throughout its whole course by a membrane analogous to mucous membrane.

A fistula is said to be either *complete* or *incomplete*.

Complete when there are two openings, one external, the other communicating with an internal cavity.

Incomplete or blind, with but one opening, which may be either external or internal.

External incomplete fistula is kept up by caries or necrosis of bones, by extraneous bodies in any of the living textures, or by purulent cavities, the walls of which have not become united.

The *great object of treatment* in fistulous sores is to bring on an altered condition of the parieties of the canal by astringent or stimulating injections, the knife, pressure, etc.; in those dependent on diseased bone, by exfoliation of the morbid part.

Distribution—Caries of teeth—shot, the parotid duct, lachrymal fistula, ear, poll evil, withers, quittor, scrotum, fistula in ano (dog), fistula in teat, vesico-vaginal fistula, fistulous umbilical hernia.

A fistula is liable to be produced in any part of the body from numerous causes such as, "blows and injuries to bones, entrance of extraneous bodies, formation of pus."—(Williams).

When pus is seated in parts, the action of which is defective owing to local or general causes, or when it cannot be completely evacuated, the cavity that remains does not contract completely, and the wound is called a sinus or fistula.

Fistula, of whatever kind, presents to the young practitioner or, for that matter, the veteran, a case which in the majority of instances tendeth to give him ample field for plying his experience, his knowledge, and too frequently a thankless and expensive operation.

In all cases have your patient under personal observation, where you can note the changes which take place towards a successful termination or *vice versa*. This is most imperative, else you become disheartened, disgusted, and your client wavers in his estimation of your ability to cope with the trouble. In all cases state exactly length of time necessary to a complete cure, more or less, circumstances altering cases. The cost should be so much per day, with medicine extra, or so much for curing, etc.

The great advantage of surgery over other modes of treatment are these:

1. If a pus cavity is readily evacuated by aspirator, trocar and canula or knife.

2. The pipe can be dissected out and escherotics applied to terminal pipes.

3. A more dependent opening can be secured.

4. The wound, a portion of which or all (if a dependent opening is secured) can be healed by first intention.

5. The usual mode of healing is by granulation.

6. Antiseptic treatment in all cases is of primary importance and absolutely necessary to a successful termination.

7. Local anæsthesia is indicative of a humane, intelligent and progressive veterinarian.

8. By removal of the cause the effects cease.

In treating sinuses the objects are to promote granulating action on their surfaces, and to press their sides together. They are not healed by filling up, any more than the original cavity of the abscess, but contract until they become obliterated or close more directly by union of their opposite sides.

The presence of pus being indicated by the swelling, heat, pain, etc., by manipulating you determine by compressing the skin and fluctuation with a small searcher or trocar and canula; after applying a twitch to the nose, you puncture the skin and ascertain the contents of the abscess, or a sinus may be present and matter exuding therefrom, the hair in its immediate vicinity being matted and wet.

Before operating it is necessary to thoroughly wash with tepid water and soap and a scrubbing brush, used carefully, all around the proposed wound; after drying, clip away the hair; this keeps the hair from becoming matted with the accumulation of debris of diseased tissue, etc. The kind of wound necessitates at all times that the animal should be under complete control and in a position most suitable for operating. All instruments, needles, sutures and whatever the operator deems essential to a successful termination, must be aseptic; antiseptic sponges, dressings and washes must be convenient and ready to handle.

Anæsthetics of whatever kind, whether general or local, are indicated in major or minor surgery. It is so in the human practice; why otherwise in ours? Cocaine in a 4 or 6 per cent. solution will be found sufficient, and if injected hypo-

dermically in several places in direction of proposed cutting.

Antiseptic.—Treatment for hands and instruments use 3 per cent. solution carbolic acid.

Sponges.—1. Beat to rid of all sand. 2. Wash in warm water till clean and unclosed. 3. Put into 5 per cent. sal carbolic acid which is changed every second day till eighth. 4. Then boiled for fifteen minutes in a solution of bicarbonate of soda. 5. Keep in a 5 per cent. solution of carbolic acid till wanted.

Everything being ready, proceed by first securing the animal whether by twitch alone, stocks or side lines, also considering the position best suited for performing operation. Before casting or securing, *detail your assistants*; the injection of local or other anæsthetic is now in order, and when sufficient time has elapsed, say five minutes, always if practical cut in direction of the natural lie of the hair (if possible), as when altogether healed the scar, if any, will be quite undetectable.

Modus operandi.—This is quite practicable when you have simply an abscess. First insert your director into sinus and with a strong scapel or probe-pointed bistoury lay open freely; your grasp of the knife must be firm and rigid and your arm steady. *Stop* all *bleeding* by properly ligaturing and artery forceps when readily applied. *Syringe* out with gentle force with antiseptic solution, which may be cold, to constringe vessels. The depth and extent of the cavity can be judged and direction of all sinuses; if cut was of a free nature to allow of suffiicent dependence, proceed to dissect out pirgenic membrane; this may have been extensive and involve much cutting; if so, conserve tendinous or belly part of muscles and cut longitudinally, but get to the bottom of the trouble else failure will be yours.

Escharotics, as nitrate of silver, arsenic, etc., can be applied to terminal pipes, especially so where cutting would be dangerous. I have found that the application of a large, soft emolient poultice, with free sedative spraying, which is very soothing, that the warmth and moisture have increased the healthy granulation and the remaining pipes were readily detached, especially so when the most dependent parts were

treated with caustics. The after-treatment consisted of oiling the hair immediately below the wound to protect the hair and skin, and keep clean; your removal of the cause, and hava dependent opening, will ensure a speedy cure.

The usual application of powerful caustics to fistulous affections to destroy the secreting membrane, consists of the following, and every quack and would-be horseman has his favorites: Glacial acetic acid, corrosive sublimate, carbolic acid, nitric. Hd. Hz. and So_4 agnoz., chloride of antimony, caustic soda and potash, etc.; all are exceedingly heroic treatment. The pain and suffering caused by these very powerful agents is most intense, and quite opposed to rules governing modern surgery, granted that these fistulas can be cured by use of these escharotics, provided that by extensive sloughing the dependent part enables the escape of accumulated pus and debris.

The amount of sloughing, creasing, and wasting of muscles is a standing discredit to the qualified practitioner, bordering on the ignorant charlatan, who has cured some minor cases, no doubt, and aspires to combat all diseases of the lower animals. His treatment is as follows: Secure your horse to a tree where there is no possibility of escape, and pour in from a safe distance boiling oil or solution of salt, lye, acids, and the hotter the better; all is ready to adopt any or all suggested nostrums, and one application is sufficient to make the horse frantic, dangerous to approach, and will naturally fight for his life; this should be undisputable proof that it is not necessary to subject the poor animal to such an inhuman mode of treatment, and the Society for the Prevention of Cruelty to Animals should make an example of him.

Mild astringents.—By the application of mild astringent injections after the foreign body is removed, minor fistulous wounds (e. g.) those caused by twigs, shot, punctures, etc., are readily stimulated, and one of the finest is peroxide of hydrogen; this causes very little inconvenience, and causes the unhealthy tissue to ooze and foam, but does not affect healthy parts.

Seton.—The application of a seton is very frequently the

cause of extirpating the sinus, when dependent, and when smeared with some excitant.

The actual cautery is highly spoken of in quittor, by securing a dependent opening when the cause is a suppurating corn, to allow escape of matter, and mild injections will hasten a cure; (agnoz).

Blistering is lauded by some and in some cases might be successful; that is, in punctured wound in cœcum, and by absorption in early stages of injury might check.

COCAINE IN THE DIAGNOSIS OF LAMENESS.

By W. J. TORRANCE, V. S., Cleveland, Ohio.

About three years ago, when I started to practice in Cleveland, I was astonished to find that several of the local veterinarians were performing neurotomy upon equines in the standing posture, by the simple use of hydrochlorate of cocaine. I decided that I was about to trot in fast company, and that I must speed with modern appliances. The use of cocaine upon large nerve trunks was then new to me; having, however, used it quite extensively since that time, I shall briefly relate a few of the cases where it proved of interest to me.

The first subject for trial was a case of chronic lameness in a fore limb, in which no appreciable changes in the anatomy of the limb were present by which to positively locate the affection. Some authorities claimed this a case of shoulder lameness. I injected along each metacarpal nerve one and one-half drachms of a five per cent. solution of cocaine, and ten minutes later led the horse out to be cast for operation. He, however, did not walk lame; so I trotted him every ten minutes, and was surprised to find that for one hour he positively refused to *limp*, and then in the course of a few minutes he became painfully lame again. I neurotomized the limb and the operation proved a success.

I now surmised, firstly, that I had a "dope" for lame horses; secondly, that I had a positive test for many obscure lamenesses.

A horse was brought to me "quarter-sore," and for sale. Cocaine along his metacarpal nerves sent him away sound enough for all practical purposes.

Some time ago I owned a spavined pacer, and a Jew came to trade for him. He disputed the horse's age and found many faults which were not present. I offered to lead the animal out to let him see him move; but he said he knew more about a horse than I did, and would not have the horse. He promised, however, to come the next morning if he could do no better. Now the horse was lame on the spavin, and I intended to dispose of him cheaply and honestly, but thought that one lesson on the action of cocaine would do the impudent Jew no harm. Next morning I injected cocaine freely around the seat of the spavin, which was low, and when the Jew came, he paced so well to balks that I succeeded in disposing of him. That afternoon the old pacer was painfully lame again.

Yesterday I was called to see a fast horse, lame in a fore limb. The location was disputed by two other veterinarians, and I was summoned to cast the deciding vote. Upon seeing the animal move and manipulating all parts of the limb, I located the lameness in the lateral ligaments of the pastern joint. The owner asked me, "Can you prove that this horse is not shoulder-lame?" I answered "Yes, sir," and at once applied the cocaine test. In eight minutes the animal went sound, and continued to do so for one hour and twenty minutes.

Last winter I was called to see a horse with an obscure chronic lameness.

History.—A chestnut gelding, six years, sixteen hands and high-bred, was shipped by rail from Kentucky fourteen months previous, and got off the car in Cleveland lame in the off fore limb. He was positively never lame before in his life.

Almost all the leading veterinarians in this and other large cities located the lameness in the shoulder, and before I saw the animal he had been fired, blistered, setoned, etc., etc., at every point from the pastern to the withers, and still staid lame, excepting that occasionally he would go sound enough

to hook to a cart, and then would suddenly fall dead lame after going about a mile.

Symptoms.—No heat in any part of limb, would never point over two inches, if at all, never raised the heels, straightened his pastern, or relaxed his fetlock, but at times held the foot slightly outwards; was sound on a very slow walk, and painfully lame on a trot, especially down hill or in a circle; hard or soft ground did not affect the lameness. He would stand upon the lame limb alone without indicating pain; would lift the foot in backing, and had no symptoms of "circumscribed hepatitis." The gait was an adduction of the elbow with the greatest amount of "inside circumduction" of the lower limb in advancement that I ever witnessed. The feet were uniform in all their measurements and angles, and devoid of heat or tenderness, no matter how or how often tested. There was always a quivering of the panniculus along the inner border of the coraco-radials (perhaps due to previous treatment) and an increased sensitiveness to the electrical current.

I ventured to locate the lameness in the pectoral muscles, and could in no other way account for the extreme amount of inside circumduction in progression. During fourteen months the muscles of the limb had not wasted appreciably, and no manner of flexion and extension would yield positive results.

After treating the animal with firing, blistering, escharotic and vessicant setons, etc., etc., with long rest, he trotted sound for about a week, and then suddenly went dead lame again, when I gave him up as a "gone goose."

During this time I had told the owner about the "cocaine test," but thought it foolish to try it upon so sure a case of shoulder-lameness as this. The horse staid lame and got worse, and the owner coaxed me to try the "cocaine test" before killing the animal. I did so reluctantly, and eight minutes after injecting it he trotted sound under all tests, and continued to do so for an hour and a half.

I neurotomized the limb that afternoon, sent the horse home sound gaited, and he stays that way.

Thus it will seem that an injection of cocaine decides in eight minutes the fate of an animal for eighteen months pain-

fully lame, with a defect so obscure that it had "tripped" the veterinary talent of this district.

With your kind permission, Mr. Editor, I shall continue to discuss the subject at some future date.

THE DISINFECTION OF HORSE-SPONGES.

Translated from the German by RICHARD MIDDLETON, D.V.S.

It is known that the use of sponges for cleaning and therapeutical purposes may give rise to various unpleasant consequences. Since impurities, infectious material, secretions and exudates, either dilute or tenacious, readily acquire a grasp upon the sponge texture, such have often enough given occasion to the transportation of infectious diseases. This danger is rife, especially in the stables of omnibus and street car companies, where it is customary to wash the nasal openings after a tour, or in the summer time. From using one and the same sponge, the latter becomes over-inoculated with the principle of glanders, rhino-adenitis, stomatitis contagiosa, etc. After two Italian veterinarians, Rabbaglietti and Diana, had earlier called attention to the loss in the Italian army from this cause, Baruchello undertook a bacteriological investigation upon horse sponges, and in a subsequent treatise acknowledged the detriment, with a practical proposition for the judicious disinfection of such sponges. It had been suggested that a separate sponge be kept for each animal, and not allowed to be interchanged. The subject has lately been still further developed, and now it is proposed to periodically disinfect the stagnant sponges, and especially so to do during epidemic diseases. Baruchello has suggested a more feasible method. He took from the soldiers of several squadrons, worn-out sponges and pieces, as they came to hand, and from these he cut cubes of one centimeter each. These he put in reagent glasses with fluid gelatine as a culture food. After thorough shaking, so as to remove the adhering germs, these cubes were removed. Esmarck's method of "flat roll cultures" was used. The method consists in stopping the tubes

with sterilized wadding and a rubber cap, and then, in a horizontal positson, twisting it under a stream of water until the gelatine becomes evenly fixed upon the sides of the tube and solid. Baruchello demonstrated that new sponges washed in sterilized water also developed colonies of bacteria, though very few. With the room at a temperature of 65° to 77° F., a multitude of colonies began to show themselves in twenty-four hours, and the gelatine to assume the fluid state. On the second day after inoculation, Baruchello counted the colonies in a square centimeter. From one very dirty sponge 23,866; from three moderately dirty, 7,534, 10,896, 6,312; from two well-washed in sterilized water, 128 and 147; from two new sponges, 32 and 40; and from one new sponge washed in sterilized water, six bacterial colonies were counted. A few minutes heating at 189.5° F. was sufficient to kill most of the spores; after this, however, there developed other colonies; this pointed to a species which was extraordinarily hardy. After these experiments, Baruchello commenced the search for a suitable disinfectant; this must be of a character to destroy all microphytes and their spores; it must be at once simple, convenient, cheap, practical and not dangerous to use, or ruinous to the sponges. It has been known that dirty pieces of sponges containing the bacilli of anthrax and glanders were rendered sterile by boiling five minutes in water. In this process, however, the elasticity and porosity of the same were materially affected. Consequent upon this came a selection from the various chemicals of disinfecting value; the choice fell upon a solution of corrosive sublimate, 2–1000, mixed with a solution of acid hydrochlor. 5–1000, which is the solution of Canalis (for the disinfecting of railroad cars). The experiments of Laplace upon the disinfecting energy of the sublimate, determine the fact that this was greatest when combined with an acid. (Phenic may be used). The acid not only facilitates solution, but the subsequent decomposition when subjected to the light, Laplace has found that 0.5 cc. of blood serum from the ox was sufficient to annul the disinfecting power of the sublimate, because of the resulting decomposition of the latter. The foregoing investigations

also developed the fact that sponges washed with water alone, held, thereafter, fewer germs. Baruchello, in testing the power of the corrosive-hydrocholic mixture, showed that pieces of sponges left in this solution for two hours, and afterward placed in the culture glasses, gave absolutely no colonies. He recommends that the sponges be washed with water and then thrown in the above mixture, which is to be kept in a tub; they are allowed to remain therein until needed. This mixture is cheap; the sponges are not ruined thereby; there is no danger of poisoning or infection to man or horse, provided that the liquid be not imbibed; the sponges are always sterile.

ANTIRABIC INOCULATIONS.

MECHANISM OF IMMUNITY. SENSATIONS PRODUCED BY THE ANTI-HYDROPHOBIC PASTEUR INOCULATIONS, AS DESCRIBED BY INOCULATED SUBJECTS.*

By Paul Gibier, M.D., Director of the New York Pasteur Institute.

More than ten thousand people have been inoculated during the five years in which the Pasteurian inoculations have been practiced. Among the number were a few doctors; nevertheless there does not, so far as my knowledge goes, exist any detailed narrative of the phenomena noticed in those who were submitted to the preventive treatment for rabies after having been bitten. I have therefore thought that it would prove interesting for the study of immunity in general, and as a contribution to the history of this system of treatment in particular, to make known some of my observations.

Following in the steps of several doctors—either directors or assistants in antirabic institutions—who did so to ward against a possible accidental inoculation during their daily manipulations of virulent matter—I inoculated myself as well as two of my assistants. A young lad attached to the laboratory was likewise inoculated. But I must here and at once

* A paper read before the N. Y. County Medical Association, May, 1890.

make the following remark, that whereas the lad complained only of local sensibility, of fatigue, and of a little nocturnal agitation, we, who are more accustomed to observations, made several which I think are worthy of record.

The series of inoculations which I practiced on myself and on my two aids began March 27, 1890, with matter of the 14th day, and ended on the 10th of April following, with the matter of the second day.

The subcutaneous injections of the first four days were followed by a slight irritation, which in one of us extended as far as the redness of the tegumentum *in loco*, but without induration. During the night sleep was somewhat disturbed by the sensitiveness of the lateral part of the lumbar region, viz., at the spot of the inoculation. During the first ten days the symptoms were about the same. The temperature of the body rose slightly, but it cannot be said whether this slight febrile motion was caused through and by the injected matter, or whether it was the result of the slight inflammation caused by the injection itself. Those symptoms were considerably modified by hot baths of lengthy duration. Towards the tenth day the tissues seem to have accustomed themselves to the injected liquid; the reaction was less acute, the pain decreased, and three days after the last injection there remained, so to speak, hardly any local trace of the fifteen injections made on each side.

Thus far I have not said anything to explain the working of the immunity, but I will now take up the subject. How, then, is immunity obtained? In a book I published last year (*Analyse des Choses*—Dentu, publisher, Paris), I propound a theory, which, according to my belief, may be of use to explain this hitherto mysterious property, common alike to men and to animals, of resisting the inroads of certain diseases when once attacked by them. In the living body, what is there that resists the development of the infectious figurated element which has reached the body from the outside? Evidently it is the figurated elements which make up that body; in other words, it is the living cell. For me, immunity is a phenomenon of cellular memory. The cellulæ are small in-

dividuals, beings endowed proportionately with the constituting principle of the living being such as we know it. As such they enjoy the faculty of memory, and each time that they are attacked by a malady they remember—automatically, if you like—but still they remember how they have gotten rid of the intruder (I mean the microbe) which attacked them, and when next assailed they know immediately what measures are necessary to prevent the enemy from retaining a hold on them.

I do not desire to dwell any farther on this theory. It is sufficient for my purpose to have indicated it. I will only remark that the recent work of Metchnikoff on the part played by the white globules in the case of inflammation produced by bacteria, certainly go to strengthen that theory. I will now try to show by means of the three cases that I am about to analyze, that rabies, which is a malady affecting the nervous centers, is no exception to this rule.

In order that the nervous centers be protected against a mortal attack of rabies, it is necessary, in order to forestall the progress of the microbe, that other microbes of the same species, but attenuated, should be placed in contact with the cells of the spinal cord and of the brain. Let me make the passing remark, that the first subcutaneous injections are made with matter, the prolonged desiccation of which has caused its virulence to disappear, but it is not unreasonable to admit that the nervous cell must be influenced, in a measure, by the ptomaines secreted by the hydrophobic microbe and that this reasonably gives it a certain degree of power to resist (through being accustomed to its secretion) the attack of microbes, at first weak, then more and more virulent when introduced by the successive injections. When, after having followed (as shown by experience) the nervous fibres, which from the bitten spot go to the cord and to the brain, the infectious germ reaches the nervous cells of the cerebro-spinal axis, it finds them prepared, hardened to its attacks and it can do them no injury. Such is immunity.

What goes to demonstrate that during antirabic inoculations things take place as I have just described, is that my

two assistants and myself experienced, during and after the inoculations, a series of phenomena indicating that certain departments of the nervous system were stimulated into activity by some unusual excitement.

For my part, during the days when I took the last inoculations, and a few days after, I observed a greater activity of the salivary glands. Several times a day I felt saliva welling from the sub-maxillary glands and from the parotid canals, my mouth filled with saliva and I was obliged to eject it. During the night I was obliged to urinate, which is not my usual custom. These symptoms were the same in the case of my assistants, which evidently shows a sign of excitation of the medulla oblongata.

I recall that in 1884, in a pamphlet on hydrophobia* I have shown that *polyuria* was a frequent symptom of rabbits inoculated with the virus of hydrophobia, at the moment their nervous system was invaded by the germ.

During the last week of the treatment, and the week following, I felt a certain heaviness of the head and an inability to work. These symptoms were experienced by Messrs. Roger and de Monchy, with these additional ones: on the fifth day (inoculated with the marrow of the sixth day) Mr. Roger complained of a sudden pain in his right side, lasting about half an hour. On the eighth day (inoculated with the matter of the fourth day) he experienced dizziness which lasted intermittently for fifteen days. The twelfth day he felt pain in the lumbar region, extending as far as the right testicle. On the fourteenth day the vertigo continued, accompanied by buzzing in the ears, which rendered walking difficult. But since this treatment Mr. Roger assures me that he has been relieved of a chronic dyspepsia accompanied by pyrosis. The alvine functions are also more regular.

Mr. de Monchy was more affected by nervous troubles. From the second injection he felt pains in the nape of the neck; on the fifth day this pain spread into the brachial plexuses. After the ninth inoculation some fulgurating pains

* Recherches sur le rage et sur son traitment.—Asselin & Honzeau, Paris.

were experienced in the region of the left crural nerve. On the twelfth day he suffered a frontal cephalalgia and an exacerbation of the pains at the nape of the neck. These symptoms continued for about fifteen days after the treatment, accompanied by an unusual sexual excitement, sadness, undefined preoccupation and unlocalized pains. The appetite was always good.

Finally, Messrs. Roger and de Monchy were affected on or about the fifteenth day following the last inoculation by pains in the spots where the injections were made. These pains were so acute as to suddenly awaken them in the middle of the night. I call attention to this last fact because in one case, when a person inoculated died of hydrophobia in spite of the treatment, the adversaries of the Pasteur method took advantage of this fact, that the patient had complained of suffering at the spots of the inoculations, to pretend that hydrophobia had been communicated to him by these inoculations. One sees, however, that these injections are able to cause acute pains some time after they have been made, without determining hydrophobia.

To-day, the nineteenth of May, nearly a month and a half after the last inoculation, we are all three in a state of health as satisfactory as possible. I will add that the sixteen persons who had been inoculated at the New York Pasteur Institute in the two months following its opening, are enjoying good health, whilst several domestic animals, bitten by the same dogs that attacked several of these patients, have died of hydrophobia. A man bitten by one of these dogs and not treated at the Institute has also died of hydrophobia.

I am happy to make known these facts, and I shall be still happier if, by the application of the method of my illustrious teacher, Mr. Pasteur—the method which is so successful in Europe—I am able, on this side of the Atlantic, to preserve the greatest number of persons possible from the frightful death which is the consequence of hydrophobia.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."—VETERINARY RECORD.

AMERICAN VETERINARY COLLEGE—HOSPITAL DEPARTMENT.

THORACIG LYMPHANOMA—EXTERNAL CERVICAL AND PECTORAL ŒDEMA.

BY W. LABAW. D.V.S., House Surgeon.

The subject of this report was a roan gelding, about 12 years old. When admitted to the hospital he was merely reported as having been sick for the last two days, and eating but very little. The symptoms exhibited at the time are thus noted: condition fairly good; respiratory movements accelerated, 30 in number; pulse 60, and rather weak; temperature 103°; mucous membrane slightly injested; auscultation and percussion showing a loss of respiratory murmur in the interior of both lungs, more marked on the left side. There was a large œdematous swelling in front of the chest, extending upwards near the trachelian cartilage of the sternum, thence under the chest, between the fore legs and behind the rear leg, where it projected backward from the elbow, extending somewhat on the left side of the chest. There was also an œdematous swelling in the jugular groove, and on the inferior border of the neck, soft and pitting on pressure. The appetite was comparatively poor. A diagnosis of double pneumonia was made, though from the general condition of the patient there seemed no good ground for serious apprehension or doubt as to the result, and a favorable prognosis was given. The animal having the advantage of good hygienic surroundings, was placed under stimulants internally with the application of an oil silk jacket externally, and the administration of diuretics to stimulate the restriction of the diseased lungs, as well as to promote the absorption of the œdematous swelling of the chest and neck.

This treatment was continued for about two weeks, but failed to produce any important change in the symptoms, for though the pulse and the temperature had returned to their normal rate, the appetite was still delicate, the external appearance of the swellings remained about the same and the respiration was still disturbed, being at times accelerated and labored, though at others quite normal.

Examination of the lungs showed no change. There was the same loss of respiratory murmur, which if not completely absent, was at least very weak and had the same dulness on percussion. The condition of the lung was evidently due to a passive rather than to an active pathological condition. Was there heart disturbances; was there structural changes; or to what must the trouble be referred? The administration of heart regulators was then ordered, and digitalis and nitrate of potash, with a view to their diuretic effects, were both administered for several days, but with no other result than a disturbance in the character of the pulse, which soon rose from 42° to 60°. Exercise was then tried, but the slightest exertion was followed by extreme fatigue, the respiration becoming greatly accelerated and the breathing of heaves to an extreme degree becoming manifest, and suffocation soon threatening. After four weeks of treatment, without any manifestation of change, the owner ordered the patient to be destroyed.

The post-mortem revealed the following lesions: The inferior portions of both lungs had collapsed, and were dark in color, the superior two-thirds normal; there was the extensive collection of yellowish fluid in the thoracic cavity, but no inflammation of the pleura and no pleuritic adhesions; the heart was normal in size and in structure; and the bronchial lymphatic glands were enormonrly enlarged, assuming the size of the fist of a man, and pressing upon the blood vessels at the base of the heart, principally upon the anterior vena cava and the pulmonary veins. The lymphatic enlargements were hard, and on section showed a large increase of the connective tissue, with here and there a caseous degeneration gathering in various spots in little suppurative masses.

OBSTRUCTION OF THE DUODENUM BY ŒSTRUS EQUI.

By H. N. Walter, V.S., Windom, Minnesota.

As a fatal termination from the presence of bots in the stomach of the horse seems a very rare occurence, (Prof. Williams in his work on Equine Medicine, only referring to two cases) the following may be of some interest:

The patient was a two-year-old gelding, in rather poor condition. When first seen by me showed the following symptons: Pulse about 60 and strong, breathing much accelerated, pawed incessantly, turning the head around and looking at his side as if suffering from colic. On every attempt to pass fœces groaned with agony, and when the rectum was emptied by hand a small amount of soft dung, with a very rotten odor, was found just anterior to the fundus of the bladder and immediately above the ureters, the pressure of the fingers in that locality causing acute pain and straining. Frequent attempts were made to urinate, what little was passed being highly colored and extremely viscid, very much resembling syrup. After twenty-four hours this urine deposited a thick sediment.

Treated with hypodermic injections of morphine, hot cloths to the loins, demulcent drinks and a laxative, the urgent symptoms would abate for about twelve hours and then return with renewed violence; the patient, in the interval, eating readily, and the pulse almost regaining its normal condition. For several days no fœces were passed voluntarily, and only very small pellets could be reached by the hand, but even these, by pressing on the fundus of the bladder, seemed to cause acute pain. On the fourth day a violent diarrhœa set in which lasted until the ninth day, when the pulse being almost imperceptible and pain intense, we put an end to his sufferings.

The post-mortem examination showed the large intestines united to each other and to the abdominal walls by numerous adhesions, the walls of the bladder enormously thickened, presenting a thick mass of tissue, pale yellow in color, and very friable. Before removing the stomach, I tied two pieces

of twine round the duodenum, one close to the pyloric orifice the other about three inches from it. On dividing the intestine between the ligatures, we found it simply full of bots, adhering to the mucous membrane in a solid mass and completely occluding the canal. The stomach itself only contained a few bots and these all attached round the pylorus.

As some might suppose that the bots had detached themselves after the death of their host and passed into the duodenum, I may mention that the post-mortem was made immediately after death, and that the bots were all still firmly attached to the mucous membrane.

I think there can be no doubt that in this case the whole of the structural changes noticed were due to the gradual, occlusion and perforation of the duodenum by the bots.

GASTRIC FISTULA—TERMINATION.

By J. J. KRAUS, D.V.S., Cedarburg, Wis.

This lesion being so scarce, and literature on the subject unobtainable, a report of the following case which occurred in my practice in the fall of 1888 will be interesting to many of my professional brethren:

HISTORY.—Two or three weeks before I was called to see the case, a valuable Holstein, four years old, had been horned in the right flank, and thereby violently thrown on to a short stump, of the size of a man's wrist, causing quite a bad bruise, which in the course of ten or fourteen days developed into a large abscess, ruptured and discharged a large amount of very offensive pus, mixed with contents of the stomach.

The owner, upon seeing this, lost all hopes of recovery, and it was only through accidental coincidence with the same, on the evening of the third day after the rupture had taken place, that I was requested to attend to the case.

On examination, I found the patient languid, rapid emaciation, but little thirst and appetite, rumination almost entirely suspended, temperature 102 3-5, pulse 55; and on the infero-posterior border of the last rib (on the left side) a fistula of the size of a lead pencil discharging a very offensive material, consisting of pus and gastric-ingesta.

Being about dusk that evening, the operation had to be postponed until the next day, but owing to other urgent cases coming to hand, I could not see her until the second day thereafter.

At that time her temperature was 104 1-5°, pulse 74, and about six inches below the external orifice of the fistula a soft, fluctuating tumor had made its appearance, which upon pressure discharged the usual material. To operate, the patient was first cast on its right side, legs firmly tied, abdomen thoroughly cleansed with warm water, and the hair clipped as short as possible all around the orifice.

The instruments used, besides a sponge and carbolized catgut, were a scalpel, probe bistoury, artery forceps, hypodermic syringe and curved needle.

On probing the fistula, it was found to extend downwards between skin and abdominal wall to the bottom of the tumor above mentioned, where it pierced the abdominal wall.

This being opened, and the sac thoroughly cleaned, a probe bistoury was introduced down into the stomach, making an incision directly upwards about six inches. A similar incision was made from the same point backwards, giving a right-angled incision base and perpendicular six inches in length.

The included triangle thus produced being thrown backwards exposed the stomach to full view. At first, the hemorrhage was very profuse, but was soon controlled by cold water application. No blood could gravitate into the abdominal cavity on account of the rumen being firmly pressed against the edges of the wound, which (the rumen) owing to the abnormal position of the patient, had turned so much on its axis as to hide the fistula several inches above the upper border of the incision.

With hands and arms well oiled this was soon overcome by manipulating the organ and its contents.

The hole in the wall of the stomach was oval in shape, and large enough to admit the first and second phalanges of my index finger, its borders attenuated and slightly granulating. With a sharp scalpel I removed a small triangle at the lateral

borders of the opening, rendering it elliptical in shape, and about two inches long, the edges of which were easily brought into opposition with carbolized sutures, without puckering at the ends. This done, the entire wound was again thoroughly washed with a boracic acid lotion, and well-oiled with acid carbol., m. lx, ol olive, o. i.

The abdominal wall I sutured very firmly with strong wire sutures, and the skin, externally, with strong waxed-end.

About one-half of the wound healed by primary adhesion, and at the end of six weeks the cow yielded very near her usual quantity of milk, and was, seemingly, as healthy as ever.

For the first ten days I prescribed for internally, salicylic acid, 2 drachms; sulphate magnesia, 3 oz.; gentian po., 4 drachms—one dose twice daily. Soft, laxative and cooling diet, and as little as possible. Externally I used acid carbol, 1 drachm; ol. gossypium, o. i.

FRACTURE OF THE PENIS.

By C. F. Menninger, M.D., Topeka, Kansas.

It is not often that we are obliged to chronicle an accident of so peculiar a nature as fracture of the penis. The literature of the subject is very meagre, and we therefore feel that we find in the very scarcity of record a reason for this article. Some time about the 20th of this month, on a large stock farm near Denver, a valuable stallion, Richelieu, while in the act of covering a mare, sustained an injury to his penis. The injury was no doubt caused by striking it against the ischial protuberance, yet the attendant declares it to be due to the fact that the mare, being fractious, plunged and turned to one side. The penis was bent at nearly a right angle (the bend being situated at about the point of the sheath) and was deflected to the right side and twisted upon itself nearly one-fourth of its circumference. The sheath and prepuce soon became swollen. At no time was there any passage of blood with the urine, and there was but very little extravasation into the penis, nor much inflammation of it. The inflamed prepuce and sheath were skillfully restored to natural state in

a short time by hot fermentations and stimulating liniment, and the penis is gradually becoming more and more straight, and will, we believe, become so in a short time. It is our idea that the rupture involved the dense fibrous cylinder around the left cavernous body, with also a partial oblique rupture of the same. The form of this gap in the fibrous sheath and cavernous body when engorged with blood is wedge-shaped, and hence causes a flexion of the organ to the right.

EXTRACTS FROM FOREIGN JOURNALS.

TWO CASES OF TETANUS IN SWINE.

By M. Claverie.

Traumatic Tetanus.—A pig exhibited the following symptoms: abdomen greatly enlarged, tense, and very painful; loins rigid and arched; occasional spasms, with—at comparatively frequent intervals—the expulsion of a very few drops of urine; eye dull; head erected and extended on the neck. The legs were very stiff, and were kept apart. Movement, which was very difficult, was accompanied by a painful cry. Two days previously he had exhibited tetanic symptoms, with difficulty of urination and defecation—he had been castrated about twelve days before. The animal died three days after the appearance of the symptoms which have been described. Nothing unusual was found at the post mortem, except that the bladder was largely distended with muddy urine, containing a large amount of mucus, and that the mucous membrane showed spots of a purplish red discoloration.

Idiopathic Tetanus.—The second case occurred in the practice of the author a short time after the first, and afforded evidence of the comparatively not infrequent existence of the disease amongst swine. The symptoms were very similar to those which were present in the first case, the disease terminating in the same manner and in about the same length of time. No traumatism of any kind could be traced in this case as a producing cause, and the closest investigation failed, the author says, to justify the accusation of an equine origin for the trouble.—*Revue Veter.*

FOREIGN BODY IN THE STOMACH OF A STEER—EXIT THROUGH THE THORAX.

By M. A. Bau.

This case is interesting from its own peculiarity, from the result which followed, and from the length of time during which a bulky foreign body could remain in the thorax without giving rise to serious troubles. The patient was continually moaning, principally when at work or very tired, and nothing else abnormal being very noticeable, he had been subjected to a variety of experimental modes of treatment, including bleeding, mucilaginous injections, mustard on the chest, and opiates in drenches, without any apparently favorable results. One morning a swelling was detected in the lower part of the chest, in the form of a flattened, elongated, hard and quite painful tumor. An application of blistering ointment was made and rubbed in, but the swelling continued to grow, until at last fluctuation was detected at one point. It was then freely opened, and about a quart of brown-colored purulent serosity, of an exceedingly offensive odor, made its escape. The cavity was thoroughly washed and disinfected, but the swelling remained and showed but little change. A few days later another fluctuating spot was discovered, which, when it was punctured, was found to contain a large piece of iron, about ten inches in length, black and curved in form, and probably the tooth of a rake. From the moment this was extracted, the moaning of the animal ceased and a rapid recovery followed. It was somewhat later that an important point in the history of the case was learned, in the fact that this exhibition of symptoms in the suffering animal had existed at least a year, a circumstance which justifies the supposition that it had taken the same length of time for this foreign body to travel on its way out of the abdomen through the thorax. —*Revue Veter.*

ANASARCA IN A CALF—EMBRYOTOMY—RECOVERY.

By M. Lamoureux.

This is an interesting case, in which it was estimated that following the division in utero of the fœtus and accompanying

its extraction, not less than fifty quarts of fluid escaped from the dropsical fœtal mass.

A young cow in her second pregnancy, due to calve twenty-eight days before, was observed to be unwell, and soon to exhibit expulsive efforts. Examination made by a practitioner revealed a posterior presentation and so peculiar a condition of the calf that he thought it best to recommend the transfer of the animal to the hands of the butcher. Mr. Lamoureux being called in counsel, found the cow in sterno costal decubituo, with a posterior presentation, lumbo pubic position, with the vaginal walls and the os extensively tumefied. Part of the hind legs having been pulled away, the hand being introduced into the vagina found the torn skin and muscles, and in front an œdematous cylindroid mass, covered by the skin, and without any palpable external projections. The enormous size of the infiltrated hind legs, filled with pale serosity, the œdematous feeling of the parts, with the length of the pregnancy, all suggested the diagnosis of anasarca. Embryotomy was then resorted to, and piece by piece, the fœtus was divided and secured, or torn from the cavity. The muscles being filled with serosity seemed macerated in it. The abdominal organs were removed and scarifications were made through the fleshy parts, in order to allow the escape of a large quantity of fluid. The ribs were successively torn away, the vertebræ dissected and extracted, and when the head was removed, it was only after several scarifications had been made through its thickness. The entire operation occupied four hours. The subsequent treatment consisted in hygienic measures, hot sachets on the loins and chlorinated mucilaginous injections. Recovery took place in eight days. —*Rec. Med. Vet.*

OBITUARY.

W. R. JENKINS.

It is with much regret that we announce to our friends the death of Mr. W. R. Jenkins, on the 16th June, after a long sickness. He had been attacked with a severe form of grippe,

which he rather neglected, and subsequently experienced an attack of rheumatism with heart complications, which terminated his sufferings. Mr. Jenkins was in his forty-third year, having been born in New York in 1848. In early life he was connected with a line of steamers, and subsequently engaged in the printing business. For several years he acted as dramatic critic for the *New York Herald* and *Evening Telegram.* After an extended trip in Europe, in 1878, he returned to New York to open a book store, where his true connection with our profession began. He worked for years to introduce a competent veterinary department in his business, satisfied that veterinary literature was destined to become an important branch of the publishing business. In this effort he was largely successful and had founded a house which we believe had become the veterinary publishing house of this continent. Many of our friends will regret to hear of the death of one who was almost one amongst ourselves, and who, by his affable deportment and pleasant manner, gained the friendship of all who knew him.

VETERINARY COLLEGE NOTES.

Veterinary Department, University of Pennsylvania.—The following twenty-two gentlemen have passed their final examinations and will receive their diplomas conferring the degree of *Veterinariæ Medicinæ Doctor* (V.M.D.), on June 5th: Harry Bannister, Philadelphia; Nathan A. Cohen, Philadelphia; Charles A. Dohan, Philadelphia; Harry L. Eddy, Minneapolis, Minn.; John M. Eshleman, Fagg's Manor, Pa.; John W. Harrigan, Philadelphia; Charles Rudolph Jolly,* Philadelphia; Thomas J. Kean, Lock Haven, Pa.; Edgar H. Landes, Philadelphia; Samuel D. Larzelere, Willow Grove, Pa.; John J. Maher, Philadelphia; Harry A Meisner, Baltimore, Md.; Mayhew Michener, Colmar, Pa.; Harry C. Millar, Hatboro, Pa.; Edwin S. Muir, Philadelphia; Charles F. Oat, West Chester, Pa.; Leonard Pearson, Ithaca, N. Y.; Thomas Raynor, Philadelphia; Frank L. Smith, Philadelphia; Edgar Tully, Philadelphia; John P Turner, West Chester, Pa.; Jeremiah P. Zuill, Bermuda, W. I.

***Being under the required age, will not receive his diploma until a later commencement.**

SOCIETY MEETINGS.

MASSACHUSETTS VETERINARY MEDICAL ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Medical Association was held on May 28th, 1890, at No. 19 Boylston Place, Boston, President Thomas Blackwood in the Chair.

The following members were present: Drs. Blackwood, Bryden, Howard, Lee, Marshall, Peterson, J. S. Saunders, Skally, Winchester and Charles Winslow. Honorary member, J. H. Stickney. Visitors, Dr. H. C. Ernst, Dr. J. G. Whitney, Pawtucket, R. I.

The minutes of the last meeting were read and accepted.

Dr. Winchester moved that the matter of Dr. K. Winslow's resignation be acted upon at a later meeting. Seconded, carried.

The meeting having been called for a discussion of rabies, to be opened by Dr. Winchester, he opened the discussion by saying that he claimed no originality for what he had to say, but simply gave a short résumé of the views of others, quoting Ziegler, Bruckmuller, Fleming and other pathologists. He then spoke of how difficult it is for the veterinarian to make a correct diagnosis of rabies in his patients unless he has a good history of the case or verifies his diagnosis by experiment. He concluded by giving Dr. F. S. Billings' views of the disease, especially its having but one termination, and that a fatal one.

The chair then called upon Dr. H. C. Ernst, of the Bacteriological Laboratory of the Harvard Medical School, to follow Dr. Winchester in the discussion.

Dr. Ernst commenced by saying that he regretted that he could not hear more from other members present on their individual views before speaking himself, and also hoped that any shortcomings on his part would be excused, as he had hardly rested from a trip to the West. He did not see how any one could doubt the existence of rabies. Most writers on pathological anatomy are ready to acknowledge that many things which they wrote a few years ago are wrong to-day; there is no doubt about the disease being in existence, and it is believed to be due to a *contagium vivum*.

He said that no wonder the symptoms vary, depending as in a disorder of the nervous system upon the temperament of the dog and the surrounding influences of excitement or quiet. He quoted the case of a colley dog which he owned which had recently died of rabies, a great change being noted in his disposition in a few hours between the morning and the afternoon of the day he was taken with the malady. The dog, after two or three days of suffering, was chloroformed. In this case there was a history of the dog having been bitten about three weeks previous to the time he was seized, by a strange dog passing through the street.

Dr. Ernst believes the term "hydrophobia" to be a misnomer, as the disease is not accompanied by a fear of water. We cannot judge of the disease in man by this symptom (fear of water), as the name "hydrophobia" may have an effect upon the mind of a person, affecting the imagination, whereas it would not among the lower animals. He then spoke of a recent case of rabies in a man at the Massachusetts General Hospital. This man said that he was conscious at all times during the progress of the disease, but that he had not the power to resist

the paroxysms which seized him, and the next moment it was all that four attendants could do to hold him down on the floor. May it not be the same in the case of the dog? Dr. Ernst believes it is, and that most of the cases we see of furious *rabies canina* result from exciting the animals, and that in most instances if the dog were left to himself it would take the form of what we call "dumb rabies."

He then gave a summary of the doings of the Institute Pasteur, over seven thousand persons having received the protective inoculation in four years with a loss of only 67 per cent., the percentage of mortality being less from year to year as the methods of inoculation become more and more exact. There is also a greater fatality among those bitten on the head or face.

As to the cauterization of bites from rabid animals, the cases afterwards being treated by Pasteur, cauterization being performed with the hot iron and also various chemical caustics. Of those treated in this way, and afterwards receiving Pasteur's protective inoculation, the per cent. of deaths was greater than in cases where the bite was left alone. Dr. Ernst thinks cauterization a mistake, but believes in strong ligation, if possible, and then sucking the wound. There is no danger of absorbing the poison by the mouth if the buccal mucous membrane is healthy.

Pasteur, in his Annals of the Institute, prints a map showing how much more common the disease is in some localities than others in France, and also gives tables showing that hot weather has nothing to do with increasing the frequency of the disease, it generally being more common in the winter months.

Dr. Ernst then spoke of the first case of rabies in this locality being brought to his attention by the Secretary of this Association a year ago, and its increasing frequency up to the present time. He has also known of five cases of human rabies near Boston within the last four months, and more may have occurred which were not correctly diagnosed. He also said that all scientific bodies should protest against such evidence being produced as was given at a legislative hearing on muzzling dogs at the State House last winter.

In answer to questions asked him by the different members, Dr. Ernst said that he believed in the efficacy of Pasteur's protective inoculation. That there is no way of making a positive diagnosis of rabies except hy inoculation experiments. That he doubts if there be any spontaneous recovery from rabies, and if a case with symptoms of rabies recovered, he would not believe it was rabies unless it was proved in some way by inoculation experiments. He believed that if every dog in the community were muzzled for three months the disease would be stamped out; but it would be almost impossible to enforce such a law even if it were passed.

The President then called upon Dr. J. O. Whitney, who cited a number of rabies among people which he had seen, or that had been called to his attention in the neighborhood of Pawtucket, the instances given occurring at intervals from forty years ago down to the present spring, all the cases being directly traceable to bites of rabid dogs. Dr. Whitney also spoke of the greater danger from the bite of a rabid wolf. He also compared the mortality among people protected by Pasteur's method—less than one per cent.—and the mortality among those who received no protective inoculation where the death rate was fifteen per cent. of those bitten.

Dr. Bryden spoke of a case of rabies in a horse belonging to a client of his at Weymouth, which he was called to see several years ago.

Dr. Ernst then explained the principles of protective inoculation as employed by Pasteur, and described the difference between the old method at first used, and the intensive method which is the one resorted to now. He also said that Pasteur had probably not lost any cases that he began on in time, and that he had never had a case of blood poisoning resulting from inoculations against rabies.

Dr. Ernst and Dr. Saunders then discussed the question of the spontaneity of rabies, in which Dr. Ernst did not believe.

Dr. Winchester moved that a vote of thanks be given Dr. Ernst for attending and taking part in the discussion. Seconded and carried.

The following cases were then reported by Dr. Winchester. A case of cyanosis in a foal, the foal dying after violent exertion when a few days old and the foramen ovale between the auricles being found perforate upon post-mortem examination. Specimen shown.

Dr. Stickney: A case in a yearling colt castrated this spring. A few days after the operation the end of the cord was noticed hanging through the incision in the scrotum, two or three inches being visible; it gradually lengthened until it reached his hocks, and when colt was thrown to cut cord off a second time it became easily detached by manipulation, and a piece fifteen or eighteen inches came away. The colt afterwards made a good recovery. Specimen shown in alcohol.

Dr. Peters: A case of fracture of the skull in a horse. The horse, eight or nine years old, sorrel gelding, was turned into a lane leading to a pasture; he ran down the lane and finding the bars up turned and ran back towards the barn. He fell in some way striking his forehead with great force against a tree, causing an incomplete fracture of the skull near the junction of the frontal and parietal bones, horse dying from concussion of the brain, death being almost instantaneous. On post-portem examination the thoracic and abdominal viscera were healthy. Specimen shown in a fresh state, autopsy having been made but a few hours previous.

Meeting then adjourned.

AUSTIN PETERS, *Secretary.*

INDIANA AND ILLINOIS VETERINARY MEDICAL ASSOCIATIONS.

The joint meeting of the Indiana and Illinois Veterinary Medical Associations was held in Terre Haute on the evenings of June 4th and 5th with Dr. M. E. Knowles, President of the Indiana Association, in the chair. At the opening of the meeting the Mayor of Terre Haute gave an address of welcome.

After the minutes had been read and approved and preliminary business disposed of, Dr. W. L. Williams, President of the Illinois Association, read a paper on "The Pathology of Azoturia, as suggested by its History and Symptoms."

In the discussion following the paper, Dr. Ferling inquired of essayist if he thought there was any predisposition?

No.

Dr. Bell inquired if animal was more subject to a return of the trouble after being once attacked. The essayist would say no, although there have been many cases that have had the trouble two or three times.

Dr. Thompson inquired if it was not more frequently seen in draft horses? The essayist considered not, although he could not speak from experience, his practice being almost entirely outside of draft stock.

Dr. Mylne: Is change of blood local or general? Local in gluteal regions, because of their doing most work.

Dr. Knowles: Has season any influences? Yes, because of care and work being more irregular in spring.

Dr. Macaulay: The cases he had observed were almost entirely in the spring, and because of this was inclined to think the terminal nerve-endings and the pseudosiferous glands played an important part. In spring-time a horse's coat is undergoing change, thus making these nerves much more sensitive, and on a fit subject for the trouble coming from the stable to the cooler air, these extremely sensitive nerve-endings become affected and the sweat glands close and do not throw of their share of what is deleterious to the system, and thus one great channel of excretion is closed, and because of this, other channels, chiefly kidneys, are called upon for greater exertion, but being unable to take from the blood what is detrimental as fast as it is manufactured by tissue waste, the blood becomes surcharged with urea and other allied products, and the disease ensues. In almost every case the information is, that after going a short distance the animal commenced trembling and broke out into profuse perspiration; the sweat glands acting only after the disease is noticed to be present.

Dr. Ferling: How long does an animal remain down and yet recover? Nine or ten days—those remaining down longer generally succumb.

Dr. Diggs mentioned a case that had been down nine weeks and recovered.

Dr. Diggs: What percentage of cases recover after going down, in your practice? From sixty to seventy-five per cent.

Dr. Curphey: Would not the use of very soft catheters prevent excessive nervousness in patients? The essayist thought it would, but would use no catheter whatever for three or four hours.

Dr. Franklin: What treatment do you advise? Quietness; no catheter; enemas, and, if necessary, oil, sometimes stimulants.

Dr. Buckner: How does essayist quiet animal? A good strong man at head is as good as anything, but often uses gelsennum or chloral. Cases naturally have cessation of pain in three or four hours without any medicine.

Dr. Mylne next read a paper on the "Surgical Treatment of Fistula."

In the discussion following, Dr. Bell mentioned a case of fistula into cœcum following puncture, all coming out of fistula five days after puncture; used injec- iron of corrosive sublimate and had case well in four days.

Dr. Williams mentioned a case in blood mare with abcess on cervical vertebræ which had never been treated, according to owner, although ugly scars were present. This case ended fatally.

Dr. Paul Paquin, State Veterinarian for Missouri, then gave an extempotaneous lecture on "Bacteria," and mentioned results of experiments made by him in preventive inoculation for Texas fever, &c.

The doctor mentioned that in order to understand the life of bacteria, these

microbes which exist in the borderland between the animal and vegetable kingdom, one must look into and study the life of higher animals and plants.

Look at the life of the sugar beet, for instance, and we find that it stores away sugar in its roots which remains there dormant, as it were, until time of blossoming, when it becomes soluble, is absorbed and causes the flowering. The active agent in this metamorphosis is diastes.

Animals live on plants and in the assimilation of the one into the body of the other we find many changes taking place, such as conversion of starch into sugar, &c. The agent in this change is diastes.

Take any kind of microbe, the commonest, perhaps, being the one of decomposition. We find changes in the dead body such as liquefaction, the agent for this change also being diastes. This would show that on many things the lives are parallel, all have to change things before assimilation, and without these bacteria which cause these changes, there would be no life.

What is the difference between microbes which cause disease and those that do not? In action none; they all act by changing substances on which they live. The real difference is, some live on live animals and others on ferments. Some live better in fluids—as blood—some on tissues. The septicæmia microbe transforms the blood for its nourishment, and thus causes the disease. In tuberculosis the microbe lives better on tissues, and they tranform the tissues where they live. All diseases are due to living causes, and microbes are not the product of disease, as was once supposed.

The lecturer then spoke shortly on Tuberculosis, which causes one-eighth of the deaths in this country, of glanders and charbon, and then went minutely into the study of Texas fever. The micro-organism of this disease is not very easily isolated. Dr. Billings was the first man who found germs in livers of animals affected with the trouble, and connected them with the disease. Others had seen them, but he first grasped their importance. It is now known that these germs can be transmitted by inoculation from southern calves unborn to northern cattle. It is not anthracoid, the changes in the blood are quite different. We know that Texas cattle remain quite healthy while northern cattle contract the disease, and that these northern cattle cannot transmit the disease to other northern cattle. Why are these things so? The cattle in the South are "naturally" inoculated before birth, as the lecturer has proved having found the germ in diseased calves before their birth. This is nature's method of prevention. Now when inoculation means prevention, why cannot northern men inoculate their cattle before shipping South. The lecturer then went on to describe his experiments in this line, and how his last results from use of cultivated germ were very satisfactory. Forty head of Shorthorns and thirty Herefords were shipped South for stock purposes along with others not inoculated. Of those inoculated none were lost; of the others about seventy-five per cent.

In Texas fever the blood is not fluidified as in anthrax, but by using up of red blood corpuscles. The disease is to a large extent of the blood corpuscles themselves.

The softness of spleen is due to a severe congestion, but there are more microbes in liver than in spleen.

How is it northern cattle do not transmit to other northern? Because germ

of Texas fever requires a resting period during which it regains its vigor, and until such time as vigor is regained it lies dormant.

On motion of Dr. Curphey, seconded by Dr. Bell, the meeting was adjourned until next evening.

H. R. MACAULAY, *Secretary*.

[The second part of these minutes with papers, were received too late for this issue and will be published in August.—ED.]

KANSAS VETERINARY MEDICAL SOCIETY.

The Kansas Veterinary Medical Society met at the Whitley House, in Emporia, March 13th, 1890.

The meeting was called to order promptly at 7:30 P.M., with President George C. Pritchard in the Chair.

The minutes of the previous meeting were read and approved.

The Constitution and By-Laws were presented, and after a few excellent changes were accepted.

Although the Kansas Veterinary Medical Society is in its infancy, yet it has taken a long stride in the right direction, as no one can be elected to membership unless he holds a diploma from a recognized veterinary college or university with power to grant such diplomas. Certificates of membership will be issued to members, properly filled out, and signed by the President and Secretary.

A most excellent essay was read by S. E. Phillips, V.S., of Wichita, on "A Rectal Examination as an Aid in the Diagnosis of Certain Diseases."

S. L. Hunter, V.S., U. S. A., Fort Leavenworth, read an essay on "Veterinary Education." Both papers were well received, and created an interesting discussion by Messrs. D. Lemay, V.S., U. S. A., Fort Riley; W. H. Richards, V.S., Emporia; George C. Pritchard, V.S., Topeka, and J. M. Phillips, V.S., Wichita.

The President related an interesting case of lead poisoning, and Mr. Bird gave his experience, with others, in acute and chronic pleuro-pneumonia in New York.

Dr. Lemay, V.S., also gave his experience with pleuro-pneumonia while he was State Veterinarian in Maryland.

Essayists for the annual meeting, to be held in Topeka in September, 1890, were appointed by the President as follows: D. Lemay, V.S., Don C. Ayer, V.S., J. M. Phillips, V.S. and S. C. Orr. A vote of thanks was given the essayist.

The motion to adjourn was then carried, and the members of the Society were taken by W. H. Richards, V.S., (Emporia), and given a most excellent supper, which was heartily enjoyed by all, and before breaking up a vote of thanks was enthusiastically given Mr. Richards for the hospitable manner in which the members had been received and cared for by him. With many regrets we left for home, all voting it the most instructive meeting we had ever had the pleasure of attending; and if one can judge by the interest manifested throughout, the Kansas Veterinary Medical Society will take its place in the front rank in promoting the interests of veterinary science at all times and upon all occasions.

D. Lemay, V.S., was chosen delegate from our Society to the meeting of the United States Veterinary Medical Society at Chicago, in September.

Our society is officered as follows: President, George C. Pritchard, V.S., Topeka; Vice-President, R. C. Moore, V.S., Holton; Treasurer, W. H. Richard, V.S., Emporia; Secretary, S. L. Hunter, V.S., Fort Leavenworth; Censors, Don C. Ayer, V.S., Fort Leavenworth; J. M. Phillips, V.S., Wichita; S. E. Phillips, V.S., Wichita.

S. L. HUNTER, V.S., *Secretary*,
Fort Leavenworth, Kansas.

NOTICE TO THE MEMBERS OF THE OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The seventh semi-annual meeting of the Ohio State Veterinary Medical Association will be held in the Council Chambers of Dayton, O., on July 16th, at 8 P.M.

Papers will be read by Drs. G. W. Butler, S. R. Howard, W. H. Gribble and others.

Veterinarians from all other State Associations are cordially invited to attend.

W. J. TORRANCE, V.S., *Secretary*.

CORRESPONDENCE.

GRADUATES AND NON-GRADUATES.

ARCOLA, ILL., June 14, 1890.

Editor of Review:

Your Iowa correspondent gives a graphic description of the characters of the men engaged in veterinary practice in that State. I should suppose that the people of Iowa, being principally descended from the old Plymouth Rock stock, and having emigrated from the head-centre of science and culture, would be the least gullible of the Almighty's creation.

In Illinois hogringers and dehorners do not pretend to prescribe for diseases, and if asked to do so would decline, with a modesty born of merit and common honesty.

We of the West always welcome graduates whose alma mater is worthy of respect. But adolescents with the umbilical cord hardly healed, who come with diplomas from portable colleges which issue diplomas or divorces indifferently as may be demanded, and who go around prating about non-graduates and demanding legal enactments to protect the unsophisticated stock-owner from their wiles, are quickly sized up and meet with proper receptions.

A representative of this class drives out in a good rig, if he can hire or borrow one, puts on an air of wisdom, makes a cursory examination, announces a favorable prognosis, leaves medicine, says he has so many pressing engagements that he cannot stop longer, tips his hat to the hired girl, takes his departure, and after the farmer has buried the animal he sends in his bill, which savors more of larceny than of legality.

On the other hand, the experienced non-graduate, who has received his education in the school of practice, on going to a similar case, examines his patient carefully, takes temperature, pulse, respiration, uses auscultation, is careful in diagnosis and guarded in his prognosis. Having reached a decision he pulls off his coat and goes to work. He stays with his patient, carefully notes the changes in condition and adapts his treatment thereto, using any mechanical or surgical appliance the case may demand with equal nerve and skill, and never leaves the animal unless a competent assistant takes his place. He charges perhaps $10 for his work, which is gladly paid by the owner, as no funeral expenses are involved and his animal is restored to health.

The consequence is that the successful non-graduate gets the business and the kid-gloved graduate sets up a howl for protection; for unless he secures other protection than that afforded by his diploma and lack of knowledge "his name will surely be Dennis."

We have in Illinois many non-graduates who have been located in the same town ten years or longer, and have business ranging from $1,500 to $1,800 per year. These men have merited and secured the confidence and esteem of their patrons and the newly-fledged veterinarian with his Latin diploma will find it difficult to displace any one of them—unless he can get a law passed for the protection of pretension—for this being the finest stock-raising State in the Union, with the exception perhaps of Kentucky, the farmers are pretty well posted on the diseases peculiar to animals and are not easily gulled.

I will venture the opinion that you have on your subscription list of the *Review* the names of more non-graduates than of the other class. The reason of which is that the so-called

graduates—the three months Early Rose chaps, are given to understand by their diplomas that they have learned it all, and that all they need do between calls is to whittle goods boxes or pose for the inspection of susceptible females on the favorite promenades of the town they honor with their presence.

The non-graduate, on the other hand, feeling, like Newton, that he had only picked up a few pebbles from the shore of the great sea of knowledge, and that he lives in an age of progress, where the established prejudices of yesterday born of half knowledge have to yield to the better information of to-day, spends his money to procure books and periodicals pertaining to his calling, and spends his spare time in studying them in the light of his experience and practice.

The theory of the "survival of the fittest" will prevail in veterinary circles as surely as in nature, although it may be retarded by laws passed for the protection of imbeciles.

V. G. HUNT, *Vet.*

A CORRECTION.

DAVENPORT, IOWA, June 14, 1890.

Editor American Veterinary Review:

In the report of the proceedings of a late meeting of the Illinois State Veterinary Medical Association, published in the April number of your journal, I am credited with denying the constitutional nature of actinomycosis, and also with stating that the "spores" of the fungus, actinomyces, were too large to be carried by the vascular system, and that consequently the fungus was "essentially an invading one." I certainly expressed no such views, but being requested by the President to open the discussion, I did ask the essayist if the "spores" of actinomyces had been identified and demonstrated to be small enough to be carried by the blood through the capillary system; and also, if a preponderance of evidence justified an unqualified statement that the fungus was not "essentially an invading one.'

I asked these questions to direct the discussion into what I thought the most important channel, and the error of the reporter is probably due to the fact that I expressed some doubt as to the accuracy of an unqualified answer in the affirmative.

Yours respectfully,

TAIT BUTLER.